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Helpful Hints

on Preparing a Fellowship Application to the National Institutes of Health

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Introduction

In this brochure we have included several suggestions to assist you in preparing an application to the National Institutes of Health (NIH) for an individual, postdoctoral National Research Service Award, or fellowship. The criteria for evaluating fellowship applications are focused on the candidate, the training resources and environment, including the sponsor, and the research project. Your objectives, therefore, should be to demonstrate as clearly and convincingly as possible: your potential for a career as an independent investigator, the competence and commitment of your sponsor to your training, the adequacy of the training facilities and environment, the scientific merit of your proposed research project, and the appropriateness of the project for providing the necessary training. Although this brochure is no blueprint for successfully achieving these objectives, it will provide useful hints to help you avoid some frequently made mistakes and submit a more competitive application.

Read the Instructions Carefully

To avoid potential problems, carefully read both the instructions in the current application kit (PHS 416-1, Revised 7/88) and also the most recent supplementary program guidelines. Some important points are discussed below.

- **Page Limitations**

  Summary of your Research Experience (Item 27a): limited to 1 page

  Summary of your Doctoral Dissertation (Item 27b): limited to 1 page

  Research Proposal (Item 29b): should not exceed 10 pages

  Biographical Sketch of Sponsor: limited to 2 pages.

Be careful to observe the page limitations. If you exceed these page limitations, your application may be returned. Even if your application is not returned, reviewers will not be pleased with verbose prose. They much prefer brevity and clarity. Also, do not use photoreduction to cram more information into the allotted space. The gain in words will be more than offset by the irritation of a reviewer with eyestrain. In addition, the type size is further reduced when the application is duplicated at the NIH. Finally, do not use a dot matrix printer; the print is hard to read and does not reproduce well.

- **Research Plan**

While your sponsor may assist you in developing a research plan, be sure to describe the proposed project in your own words. The reviewers are interested in your understanding and approach to the research, your logic, your clarity of expression, and how you think the research will accomplish your training goals. If the language and level of sophistication of the research plan are obviously those of an experienced, established investigator, it will appear to the reviewers that your sponsor wrote the plan, and this will lessen their enthusiasm for your project. Note that Item 29c of the application asks for a description of the respective contributions of the candidate and sponsor to the research project.

The research plan does not have to be overly detailed, but it should include sufficient information so that the reviewers can evaluate your proposed project without needing to turn to reference materials.

- **Training Site**

If you propose to train at your doctorate or current institution, you must justify why you need further training at that institution, emphasize the training that would occur, and explain how it would broaden your perspective. Continued training in the department in which you received your doctorate is generally not reviewed favorably. For proposed training at a foreign institution, you must show clearly the scientific advantages over a domestic site.

- **Time Requested**

The period of time you request for your training support should be consistent with the training goals in your application. As a general guideline, a three year postdoctoral training period, regardless of source of support, is considered standard. A one year request is generally not appropriate unless an individual is finishing up the postdoctoral period. Individuals with an M.D., D.V.M., D.D.S. or equivalent professional degree and limited research training should demonstrate a commitment to a research career by proposing a training period of two years at a minimum.

- **References**

At least three references in sealed envelopes must be submitted with the application or it will be returned without being reviewed. The envelopes are to be attached to the original copy of the application. Four references are preferable. One of these references should be from your thesis advisor or chief of service. You must include an explanation if this individual is not submitting a reference report. Impress on the respondents the need for sending reference reports to you as soon as possible so that you can meet the application receipt date. Be sure, also, that the respondents realize the importance of including an evaluation of your scientific accomplishments and your potential for a career as an independent researcher.

Be Sure that You are Not Overly or Inadequately Trained

If you are already well on your way to becoming an independent investigator, consider preparing an application for a research project (R01) grant or a First Independent Research Support and Transition (FIRST-R29) award rather than for a fellowship. Fellowships are designed to provide new and needed

research training for individuals to become independent investigators, not to support someone's current research project or publication. A fellowship is not meant to be merely a repetition of the subject matter and methodology of your previous work, but is intended to broaden your research capabilities. Conversely, if you are inadequately prepared in the research area of your proposed project or if your previous training has been haphazard or disjointed, the reviewers may question your potential for performing research independently. It is useful to include preliminary data and evidence of publications, even those in press.

Experienced scientists who wish to make a major change in research directions or to broaden their backgrounds by learning new research techniques should consider applying for a Senior Fellowship.

Have Your Sponsor Demonstrate both the Capability and also the Commitment to Provide the Required Training

Selecting a sponsor based only on that individual's prestige in the scientific community is not sufficient for a valuable research training experience. The reviewers expect that the sponsor and laboratory should be proficient in the specific research disciplines to be covered in the fellowship training. Indeed, your research training should be in an area that is the main interest of the laboratory and sponsor.

Your sponsor must also demonstrate a willingness to spend the necessary time to provide you with a valuable training experience. Reviewers will not judge favorably a sponsor who seems to be over-committed or not enthusiastic, for reviewers expect that trainees will be actively supported and guided by their sponsors as the trainees develop and mature.

If your training involves a co-sponsor or other individuals who will play an important role in your research training, identify and explain the role of these individuals. If the involvement is substantial, it is important to include a biographical sketch, a listing of these individuals' research support and previous trainees, and a letter of commitment.

Describe Precisely yet Succinctly the Adequacy of the Training Facilities and Environment

The training program, as described by the sponsor, should include not only laboratory research but also other approaches such as seminars, scientific meetings, and courses. In this structured program, there should be a significant degree of interaction with other research scientists. The laboratory should also be productive, as illustrated by the quality of publications in peer reviewed scientific journals. Finally, the training should normally occur at the sponsor's institution. In special or unusual circumstances, however, multiple sites or field work may be appropriate.

Be Sure that Your Project has Merit as Research and also as a Training Mechanism

Your proposed project should not be just a vehicle for a mechanistic collection of data, but rather should contain a credible plan for research as well as a means for training. The research techniques you plan to use should be linked to your training goals.

The description of your project and methodology should be succinct but also precise. While you may safely assume that the reviewers are experts in the field and familiar with current methodology, they will not make the same assumption about you. Thus, it is not sufficient merely to state that a protein will be isolated by standard biochemical techniques; you should also explain specifically which combination of techniques you plan to use and under what conditions. In addition, include a brief discussion of potential problem areas and possible alternative approaches, as well as an explanation of how you plan to interpret the results.

For Revised Applications, be Sure the Changes are Significant and Clearly Identified

If you recently submitted a fellowship application that was not funded, you may wish to submit a revised application. Carefully analyze the summary statement from your previous application to determine whether you can

prepare a revised and strengthened application that may be considered for an award. Thus, revising your research plan or strengthening your description of the training facilities and environment would not be sufficient if your potential for becoming an independent investigator was judged by the reviewers to be only "good" (which generally means "adequate"). In such a case, you may wish to gain additional research experience, publish some articles, and perhaps obtain more preliminary data before resubmitting. You are welcome to discuss the funding situation for fellowships with a representative of the Institute to which your initial application was assigned.

If you submit a revised application, follow the instructions in the PHS 416 application kit. Include an explanation of the significant changes you have made from the prior application and any documented responses to the critique in the summary statement. If you have not made any significant revisions, your application may be returned.

NOTE: Even if you respond adequately to all the criticisms in the summary statement, there is no guarantee of an award. First of all, as is implied in its name, the summary statement is a summation of the review proceedings and is not meant to be exhaustive. Also, when you change certain aspects of the application, you always run the risk of introducing new problems. Finally, the membership of study sections is constantly changing, so that your application will probably be reviewed by several new individuals, who may have different views of your proposed research. Many but certainly not all revised applications receive NIH support.

Seek Appropriate Advice

In addition to getting assistance from your sponsor, you may want to consider a presubmission review at your own organization. This review, which must obviously be informal, could be either by a small committee or by one or two colleagues. As representatives of the same scientific community as those who will review your application at the NIH, they may be able to offer invaluable advice by pointing out unclear statements and other potential problem areas.

You might also consider contacting one of the NIH staff members listed in the fellowship program guidelines for advice on preparing an application. Their advice may help you avoid possible difficulties and present your project as effectively as possible.

Prepare Your Application Carefully

Use a clear, concise, coherent scientific writing style. A few guidelines that may prove useful include: (1) using the active voice, which is more direct, less wordy, and less confusing than the passive voice; (2) keeping together related ideas and information, for example putting clauses and phrases in sentences as close as possible to the words they modify; (3) simplifying and shortening overly long and involved sentences and paragraphs; and (4) eliminating redundant and awkward words, phrases, and sentences. Where appropriate, include well-designed tables and figures with titles that are accurate and informative.

Be sure to allow yourself time for a thorough editing, proofreading, and assembling of your application. Ironically, many people who are extremely precise in their research procedures do not take the same care in presenting their research. A sloppy application with typographical and grammatical mistakes, information omitted, and unclear statements makes a poor impression on reviewers, and may indicate that the research will be carried out in the same manner.

The entire application, which includes the sponsor's facilities and commitment statement and human subject and animal certification, when appropriate, must be submitted in one package. If you cannot comfortably meet the deadline, consider stepping back and submitting your best effort for the next receipt date.

Don't Despair

Although the competition for biomedical research training support from the NIH has become increasingly tough in recent years, the situation is far from

hopeless. Over the past 3 fiscal years (1986-1988), the NIH awarded an average of 751 individual postdoctoral fellowships per year. The award rate was approximately 39 percent of all fellowship applications reviewed or approximately 40 percent of all fellowship applications recommended for approval by the study sections. You have a reasonable chance for success if your application is well developed and carefully prepared. And you can always try again.

For Additional Information

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Revised April 1989

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